National Testing Agency

Question Paper Name :	B TECH 3rd Aug 2021 Shift 2
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Total Marks :	300
Display Marks:	Yes

B TECH

Group Number :	1
Group Id :	67603316
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No

Physics Section A

Section Id :	67603391
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80

Question Number : 1 Question Id : 6760331351 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A particle is executing simple harmonic motion with time period T. What is the

time taken by the particle to go directly to $\dfrac{1}{\sqrt{2}}$ of its amplitude from its mean

position ?
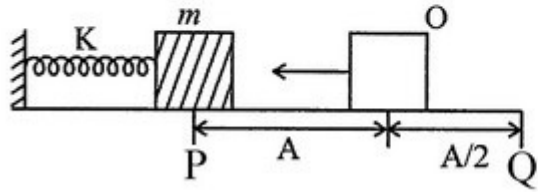
Options :

6760334051. $\dfrac{T}{8}$

6760334052. $\dfrac{T}{4}$

6760334053. $\dfrac{T}{12}$

6760334054. T

Question Number : 2 Question Id : 6760331352 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A block of mass m rigidly attached with a spring of spring constant K, is compressed through a small distance A. If the block is now released, the time taken by the block in going from P to Q will be

Options :

6760334055. $\dfrac{3}{4\pi}\sqrt{\dfrac{m}{K}}$

6760334056. $\dfrac{2\pi}{3}\sqrt{\dfrac{m}{K}}$

6760334057. $\dfrac{3\pi}{4}\sqrt{\dfrac{m}{K}}$

6760334058. $\dfrac{3\pi}{4}\sqrt{\dfrac{K}{m}}$

Question Number : 3 Question Id : 6760331353 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

One mole Argon gas is sealed inside a thermally isolated chamber of 1 litre. A 100 W heater kept inside the chamber is switched on for 30 seconds. What will be the rise in temperature of the Argon gas? [R = 8.314 J mol·K^{-1}]

Options :

6760334059. 144.3 K

6760334060. 240.5 K

6760334061. 300.2 K

6760334062. 360.8 K

Question Number : 4 Question Id : 6760331354 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

A solid sphere of radius R has mass M. A rod of mass m is attached tangentially to the sphere. What would be the moment of inertia of the system about the axis of the rod, if its diameter is negligibly small compared to R ?

Options :

6760334063. MR^2
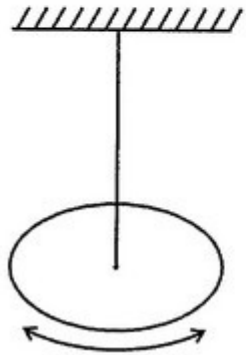
6760334064. $1.4\ MR^2$

6760334065. $1.6\ MR^2$

6760334066. $4.4\ MR^2$

Question Number : 5 Question Id : 6760331355 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

One end of a metal wire is fixed at the centre of a uniform disc of radius 4.0 cm and mass 100 g. The other end of the wire is fixed with a clamp. The hanging disc is rotated about the wire through a small angle and is released. If the disc makes torsional oscillations with time period 0.20 s, the torsional constant of wire is (Given $\pi^2 = 10$)

Options :

6760334067. $4 \times 10^{-2} \, kg \, m^2 s^{-2}$

6760334068. $8 \times 10^{-2} \, kg \, m^2 s^{-2}$

6760334069. $1.2 \times 10^{-2} \, kg \, m^2 s^{-2}$

6760334070. $8 \times 10^{-1} \, kg \, m^2 s^{-2}$

Question Number : 6 Question Id : 6760331356 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A particle is projected from the mid-point of the line joining two fixed particles each of mass m in free space. If the separation between the fixed particles is l, the minimum velocity of projection of the particle so as to escape to far away is equal to

Options :

6760334071. $2\sqrt{\dfrac{2Gm}{l}}$

6760334072. $\sqrt{\dfrac{Gm}{l}}$

6760334073. $\sqrt{\dfrac{2Gm}{l}}$

6760334074. $2\sqrt{\dfrac{Gm}{l}}$

Question Number : 7 Question Id : 6760331357 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A solid sphere of mass M and radius R lies on a horizontal rough surface. A horizontal force F is applied at the centre of the sphere. The acceleration of the centre of the sphere will be :
(the sphere rolls without slipping)

Options :

6760334075. $\dfrac{F}{M}$

6760334076. $\dfrac{3F}{5M}$

6760334077. $\dfrac{2F}{3M}$

6760334078. $\dfrac{5F}{7M}$

Question Number : 8 Question Id : 6760331358 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

A projectile is thrown with initial velocity of $(3\hat{i} + 4\hat{j})m/s$. Here '$\hat{i}$' is along the horizontal direction and '$\hat{j}$' is assumed in vertical direction. The equation of the trajectory is - (Take $g = 10 \ m/s^2$)

Options :

6760334079. $9y = 12x - 5x^2$

6760334080. $9y = 4x - 5x^2$

6760334081. $9y = 4x - 25x^2$

6760334082. $5y = 12x - 9x^2$

Question Number : 9 Question Id : 6760331359 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The velocity of a particle starting from origin which is set into motion at $t = 0$ varies as $V = V_0(2-t)$, where V_0 is a positive constant. Find the distance covered and displacement by the particle in 4 second.

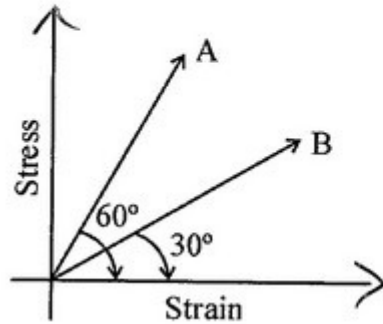**Options :**

6760334083. $4V_0, 0$

6760334084. $4V_0, V_0$

6760334085. $V_0, 4V_0$

6760334086. $V_0, 0$

Question Number : 10 Question Id : 6760331360 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The following diagram shows the relation between stress and strain of two materials A and B. The ratio of Young's modulus of A and B is -

Options :

6760334087. $1 : 3$

6760334088. $1 : 1$

6760334089. $3 : 1$

6760334090. $1 : \sqrt{2}$

Question Number : 11 Question Id : 6760331361 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

An electric charge $10^{-2}\mu C$ is placed at the origin (0, 0) of X–Y coordinate system. The coordinates of two points A and B are $\left(\sqrt{2}, \sqrt{2}\right)$ and (2, 0), respectively. The potential difference between the point A and B will be -

Options :

6760334091. $4\ V$

6760334092. $0\ V$

6760334093. $8\ V$

6760334094. $6\ V$

Question Number : 12 Question Id : 6760331362 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

If A, Z and M represents the number of nucleons, protons and mass of the nucleus respectively, then mass defect ΔM is represented by (m_p and m_n are mass of a proton and a neutron respectively)

Options :

6760334095. $\Delta M = [Am_p + (A - Z)m_n] - M$

6760334096. $\Delta M = \cdot[Am_p + (A - Z)m_n] - M$

6760334097. $\Delta M = [Zm_n + (A - Z)m_p] - M$

6760334098. $\Delta M = [Zm_p + (A - Z)m_n] - M$

Question Number : 13 Question Id : 6760331363 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

A magnetic needle of length 12 cm, suspended at its middle point by a thread, stays at an angle of 45° with the horizontal. If the pole strength of the needle is 2.4 Am, what vertical force should be applied to an end so as to keep it in horizontal position ? The horizontal component of the earth's magnetic field is 20 μT.
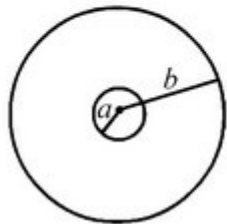
Options :

6760334099. $4.8 \times 10^{-5} N$

6760334100. $2.4 \times 10^{-5} N$

6760334101. Zero

6760334102. $9.6 \times 10^{-5} N$

Question Number : 14 Question Id : 6760331364 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Two concentric and coplanar circular coils have radius a and b ($>>a$) as shown in figure. Resistance of the inner coil is R. Current in the outer coil is increased from 0 to i, then total charge circulating the inner coil is

Options :

6760334103. $\dfrac{\mu_0 i \pi a}{2R}$

6760334104. $\dfrac{\mu_0 i^2 \pi a}{2R}$

6760334105. $\dfrac{\mu_0 i^2 \pi a}{3R}$

6760334106. $\dfrac{\mu_0 i \pi a^2}{2Rb}$

Question Number : 15 Question Id : 6760331365 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

To view a small object with angular magnification 5, the power of the microscope needed is [The final image is formed at infinity] (Distance of distinct vision = 25 cm)

Options :

6760334107. 5 D

6760334108. 10 D

6760334109. 20 D

6760334110. 25 D

Question Number : 16 Question Id : 6760331366 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

If a man having the least distance of distinct vision of 50 cm, what should be the focal length of the spectacles for the man ?
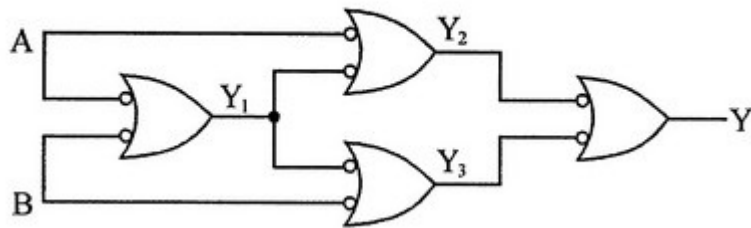
Options :

6760334111. $-50\,cm$

6760334112. $+50\,cm$

6760334113. $+100\,cm$

6760334114. $+25\,cm$

Question Number : 17 Question Id : 6760331367 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Identify the resulting gate for the following circuit.

Options :

6760334115. OR Gate

6760334116. Exclusive-OR gate

6760334117. NOR gate

6760334118. AND gate

Question Number : 18 Question Id : 6760331368 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A radioactive isotope has a half life of T years. After how much time is its activity reduced to 6.25% of its original activity ?

Options :

6760334119. 2 T years

6760334120. 4 T years

6760334121. 1.5 T years

6760334122. 1 T year

Question Number : 19 Question Id : 6760331369 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labeled as Assertion A and the other is labeled as Reason R.

Assertion A : Communication techniques which are using much higher frequencies like TV signal broadcast, can not be received beyond the line-of-sight.

Reason R : Radio waves used for radio broadcast which are in the below critical frequency range, receive reflection from the ionosphere and can be received by the receiving antenna.

In the light of the above statements, choose the *correct* answer from the options given below.

Options :

6760334123. Both **A** and **R** are true and **R** is the correct explanation of **A**.

6760334124. Both **A** and **R** are true but **R** is NOT the correct explanation of **A**.

6760334125. **A** is true but **R** is false.

6760334126. **A** is false but **R** is true.

Question Number : 20 Question Id : 6760331370 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

A block of mass 4.0 kg is pulled up on a smooth incline of angle 30° with the horizontal. If the block moves with an acceleration of 1.0 m/s^2, the power delivered by the pulling force at a time 3.0 s after the motion starts is

Options :

6760334127. 70.8 W

6760334128. 35.4 W

6760334129. 65.4 W

6760334130. 85.4 W

Physics Section B

Section Id : 67603392

Section Number : 2

Section type : Online

Question Number : 21 Question Id : 6760331371 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

_____ $\times 10^{-10}$ J (joule) energy is contained in a 120 m length of a laser beam operating at 4mW.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 22 Question Id : 6760331372 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The magnetic flux linked with a coil at any instant 't' is given by

$\phi = 5t^3 - 100t + 300$ (SI unit). The emf induced in the coil at t = 2 s is

_____ V.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Question Number : 23 Question Id : 6760331373 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The ratio of shortest wavelength to the largest wavelength in Brackett series of atomic spectra for hydrogen atom is $x : 25$, where the value of x is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 24 Question Id : 6760331374 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A train left the station at uniform acceleration of 2 m/s². A man behind the train at a distance of 5 m is running with a constant speed of 6 m/s to catch the train. The time to catch the train will be _____ s.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 25 Question Id : 6760331375 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A sample undergoing beta decay, reduced to $\frac{1}{16}^{th}$ of its initial mass in 48 years. Its half life period is _____ years.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 26 Question Id : 6760331376 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Two particles of equal mass 'm' go round a circle of radius R under the action of their mutual gravitational attraction. The speed of each particle is $\sqrt{\frac{1}{x} \cdot \frac{Gm}{R}}$

where x is _____ .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 27 Question Id : 6760331377 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

In Young's double slit experiment, 58 fringes are observed in the field of view when a light of wavelength 6000 $\overset{\circ}{A}$ was used. Number of fringes that can be viewed, if another light of wavelength 4000 $\overset{\circ}{A}$ is used are _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
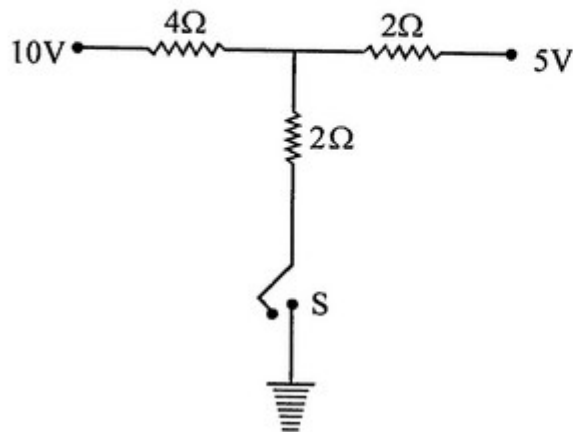**Answers Type :** Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 28 Question Id : 6760331378 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

As the switch S is closed in the circuit shown in figure, current passed through it is _____A.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 29 Question Id : 6760331379 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The electric potential at point $(x, 0, 0)$ is $V = \left(\dfrac{1000}{x} + \dfrac{1500}{x^2} + \dfrac{500}{x^3} \right)$ volt.

The electric field strength at a point $x = 1\ m$ is _____ $\hat{i}$ V/m.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 30 Question Id : 6760331380 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A body of mass 20 kg is placed at a latitude of $45°$ on earth of radius R and angular speed ω. The change in weight of the body (if earth stops rotating)

is $x R\omega^2$. The value of x is _____ .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Chemistry Section A

Section Id :	67603393
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	67603393
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 6760331381 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : In dichromate ion, all the Cr—O bonds are of equal length.

Statement II : In dichromate ion, the Cr–O–Cr bond angle is less than the H—O—H bond angle in water

In the light of the above statements, choose the *correct* answer from the options given below

Options :

6760334141. Both Statement I and Statement II are true

6760334142. Both Statement I and Statement II are false

6760334143. Statement I is true but Statement II is false

6760334144. Statement I is false but Statement II is true

**Question Number : 32 Question Id : 6760331382 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**

The lowest freezing point among the following solutions will be observed in

[Atomic weight : C = 12, Mg = 24, Na = 23, Cl = 35.5, O = 16, N = 14]

Options :

6760334145. 5.85g of NaCl in 500 mL water

6760334146. 6g urea in 500 mL water

6760334147. 18g of glucose in 500 mL water

6760334148. 9.5g of $MgCl_2$ in 500 mL water

**Question Number : 33 Question Id : 6760331383 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**

The correct order of the basic character for the following metal hydroxides is

Options :

6760334149. $Al(OH)_3$ > $Ca(OH)_2$ > $Ce(OH)_3$ > $Lu(OH)_3$

6760334150. $Ca(OH)_2$ > $Ce(OH)_3$ > $Al(OH)_3$ > $Lu(OH)_3$

6760334151. $Ca(OH)_2 > Ce(OH)_3 > Lu(OH)_3 > Al(OH)_3$

6760334152. $Lu(OH)_3 > Al(OH)_3 > Ce(OH)_3 > Ca(OH)_2$

Question Number : 34 Question Id : 6760331384 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**

Assertion A : Fluoride based compound is added during extraction of aluminum from bauxite.

Reason R : Alumina is a poor conductor of electricity.

In the light of the above statements, choose the correct answer from the options given below

Options :

6760334153. Both A and R are true and R is the correct explanation of A

6760334154. Both A and R are true but R is NOT the correct explanation of A

6760334155. A is true but R is false

6760334156. A is false but R is true.

Question Number : 35 Question Id : 6760331385 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Which one of the following statements is incorrect?

A.   The correct order of increasing first ionization enthalpy is $Li < H < F$.

B.   Out of the three isotopes of hydrogen, two are radioactive

C.   Reactivity of halogens is much more than that of hydrogen.

D.   The size of H^+ ion is less than 0.1 pm.

Options :

6760334157.   A only

6760334158.   B only

6760334159.   C only

6760334160.   D only

Question Number : 36 Question Id : 6760331386 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

A white solid (X) on heating forms a solid (Y) and a gas (Z). Another solid (B) forms (X) by reacting with (Z). (Y) can be converted into (X) and (B). What is (Y)?

Options :

6760334161. $CaCO_3$

6760334162.   CaO

6760334163. $Ca(OH)_2$

6760334164. $CaCl_2$.

Question Number : 37 Question Id : 6760331387 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Silicones are group of organosilicon polymers. Which one among the following acts as a chain terminating unit in silicone polymerization?

Options :

6760334165. $Si(CH_3)_4$

6760334166. $Si(CH_3)_3Cl$

6760334167. $Si(CH_3)_2Cl_2$

6760334168. $Si(CH_3)Cl_3$

Question Number : 38 Question Id : 6760331388 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Which one of the following set will give coloured aqueous solution?

Options :

6760334169. Cu^{2+}, V^{3+}, Sc^{3+}

6760334170. Sc^{3+}, Ti^{4+}, Mn^{3+}

6760334171. V^{3+}, Mn^{3+}, Cu^{2+}

6760334172. V^{3+}, Cu^{2+}, Ti^{4+}

Question Number : 39 Question Id : 6760331389 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Which one of the following statements is correct?

Options :

6760334173. Ce^{4+} is more stable than Ce^{3+} due to $4f^0$ configuration.

6760334174. Eu^{2+} is more stable than Eu^{3+} due to $4f^7$ configuration.

6760334175. Ce^{4+} is an oxidant and Eu^{2+} is a reducing agent.

6760334176. Ce^{3+} and La^{3+} salts are colored and paramagnetic.

Question Number : 40 Question Id : 6760331390 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The oxidation states of Fe in $[Fe(NCS)(NH_3)_5]SO_4$, $Na_3[Fe(S_2O_3)_3]$ and $[Fe(CO)_5]$ respectively are

Options :

6760334177. 3, 2 and 1

6760334178. 3, 3 and 0

6760334179. 2, 3 and –2

6760334180. 3, 3 and –2

Question Number : 41 Question Id : 6760331391 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**

Assertion A : Fluoride ion concentration above 2 ppm causes brown mottling of teeth.

Reason R : The presence of fluoride ions in drinking water converts hydroxyapatite (tooth enamel) into fluorapatite.

In the light of the above statements, choose the *most appropriate* answer from the options given below

Options :

6760334181. Both A and R are correct and R is the correct explanation of A

6760334182. Both A and R are correct but R is **NOT** the correct explanation of A

6760334183. A is correct but R is **NOT** correct

6760334184. A is **NOT** correct but R is correct.

Question Number : 42 Question Id : 6760331392 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

In the detection of nitrogen in an organic compound by Lassaigne's test, the iron compounds formed are

Options :

6760334185. $[Fe(CN)_6]^{3-}$, $Fe[Fe(CN)_6] \cdot xH_2O$

6760334186. $[Fe(CN)_6]^{4-}$, $Fe_2[Fe(CN)_6] \cdot xH_2O$

6760334187. $[Fe(CN)_6]^{4-}$, $Fe_4[Fe(CN)_6]_3 \cdot xH_2O$

6760334188. $[Fe(CN)_6]^{3-}$, $Fe_3[Fe(CN)_6]_2 \cdot xH_2O$

Question Number : 43 Question Id : 6760331393 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
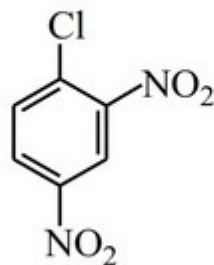**Correct Marks : 4 Wrong Marks : 1**

Order of reactivity for hydrolysis of substituted chlorobenzenes in the presence of aqueous NaOH is
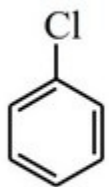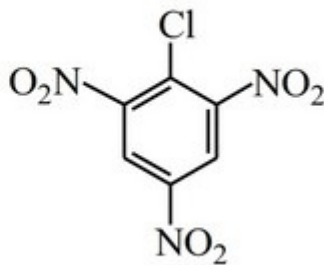

(A) (B) (C) (D)
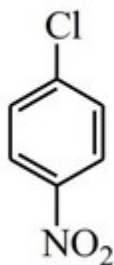
Options :

6760334189. $C > B > D > A.$

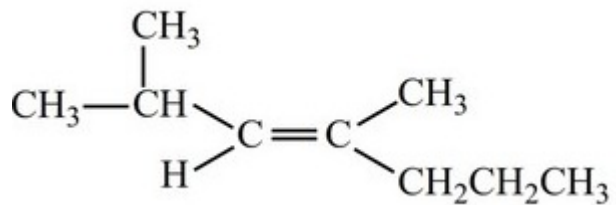6760334190. $A > B > C > D$

6760334191. $D > C > B > A$

6760334192. $B > C > D > A$

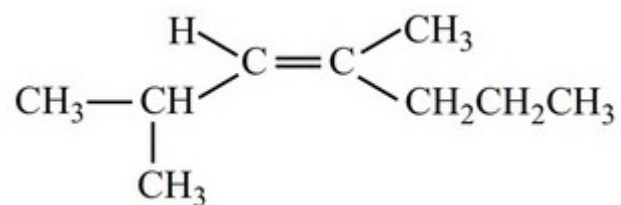**Question Number : 44 Question Id : 6760331394 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1**

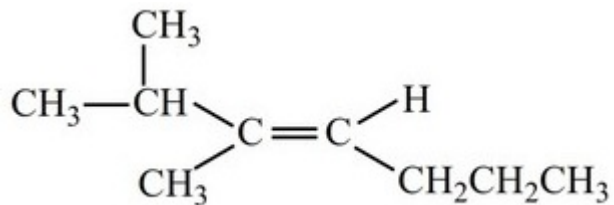The correct structure of *cis*–2,4-dimethylhept-3-ene is,

Options :

CH₃ structures for question options.

6760334193.

(structure: CH₃—CH(CH₃)—CH= with C=C, H below left carbon, CH₃ and CH₂CH₂CH₃ on right carbon)

6760334194.

(structure: H and CH₃ on C=C, CH₃—CH(CH₃)— attached, CH₂CH₂CH₃ on right)

6760334195.

(structure: CH₃—CH(CH₃)—C(CH₃)=C with H and CH₂CH₂CH₃ on right)

6760334196.

(structure: CH₃CH₂ and CH₃—HC(CH₃)— on C=C, H and CH₂CH₃ on right)
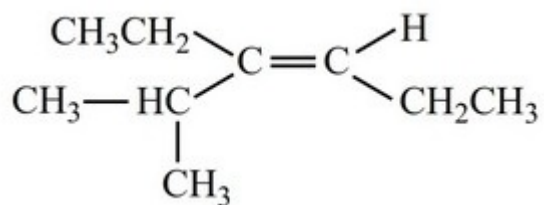
Question Number : 45 Question Id : 6760331395 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Arrange the following halides in the increasing order of their reactivity towards S$_N$1 reaction mechanism.

(A)   (B)   (C)   (D)

Options :

6760334197.   A < B < D < C

6760334198.   B < A < D < C

6760334199.   C < D < B < A

6760334200.   C < D < A < B

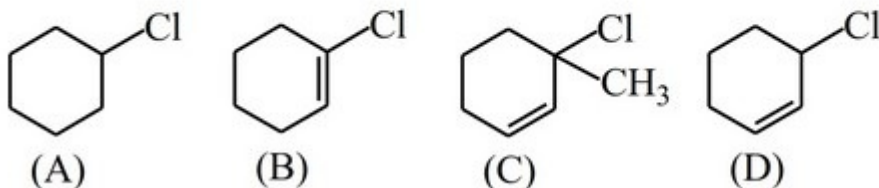**Question Number : 46 Question Id : 6760331396 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No**
Correct Marks : 4 Wrong Marks : 1

Which one of the following reagents are not suitable for the preparation of benzaldehyde from benzene?

Options :

6760334201.   a) CH_3Cl + Anhyd. $AlCl_3$
                b) CrO_2Cl_2 + CS_2 / H_3O^+

6760334202.   a) CH_3Cl + Anhyd. $AlCl_3$
                b) Cl_2/Fe dark / H_2O (373K)

6760334203. a)   CO, HCl, Anhyd. AlCl$_3$

6760334204. a)   CH$_3$Cl + Anhyd. AlCl$_3$

               b)   CrO$_3$, (CH$_3$CO)$_2$O, H$_3$O$^+$ (Heat)

Question Number : 47 Question Id : 6760331397 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

A. $\xrightarrow[\text{2) Heat}]{\text{1) NaNO}_{2(aq.)}, \text{ HCl}}$ B. $\xrightarrow[\text{conc. H}_2\text{SO}_4]{\overset{\oplus}{\text{NO}_2}}$
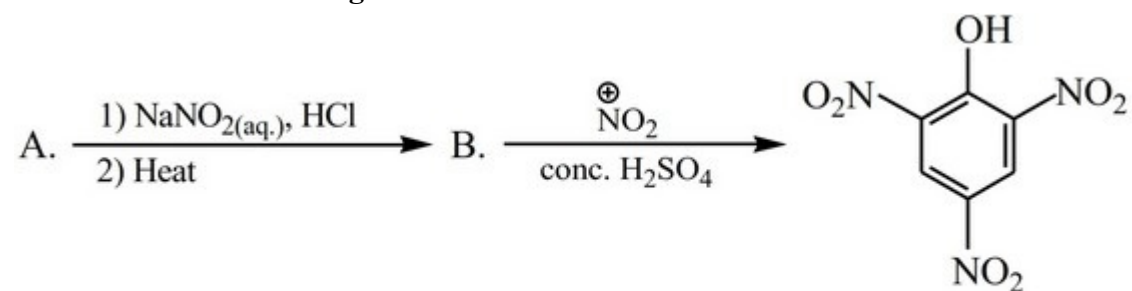
In the above reaction sequence the compounds A and B respectively are
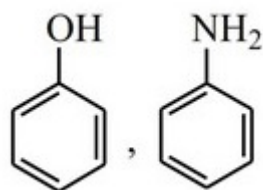
Options :

6760334205.

6760334206.

CH$_3$CH$_2$CONH$_2$,
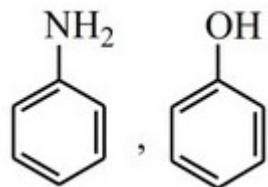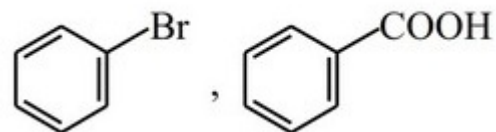
6760334207.

6760334208.

Question Number : 48 Question Id : 6760331398 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Match List I with II

List I	List II (Ion detected)
A. Borax Bead test	I. As^{3+}
B. Charcoal cavity test	II. Al^{3+}
C. Flame test	III. Fe^{3+}
D. Lake test	IV. Sr^{2+}

Choose the correct answer from the options given below :

Options :

6760334209. A − III, B − I, C − IV, D − II

6760334210. A − IV, B − I, C − II, D − III

6760334211. A − III, B − II, C − IV, D − I

6760334212. A − I, B − III, C − IV, D − II

Question Number : 49 Question Id : 6760331399 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
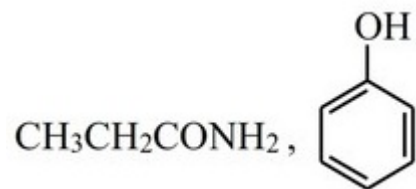**Correct Marks : 4 Wrong Marks : 1**

Select the odd group

Options :

6760334213. Protein, Starch, Cellulose

6760334214. Nylon 6, Polythene, Teflon

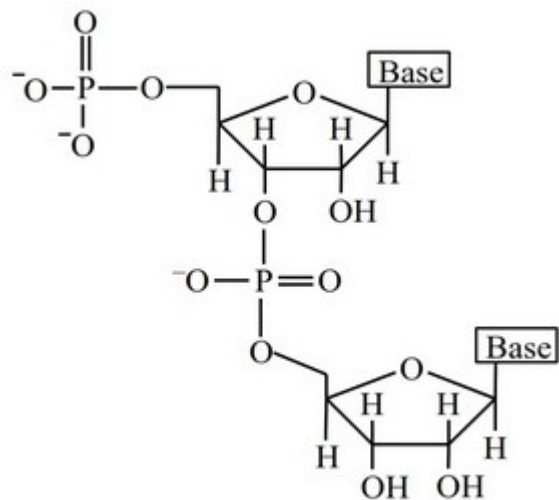6760334215. Rayon, Caprolactum, Buna-S

6760334216. Nylon 6,6, Dacron, Buna-N

Question Number : 50 Question Id : 6760331400 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which one of the following represents the correct structure of a dinucleotide?

Options :

6760334217.

6760334218.

6760334219.

6760334220.

Chemistry Section B

Question Number : 51 Question Id : 6760331401 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Chlorine is prepared according to the following equation :

$$4HCl + MnO_{2(s)} \longrightarrow 2H_2O_{(l)} + MnCl_{2(aq)} + Cl_{2(g)}.$$
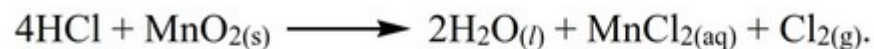
10g sample of MnO_2 produces 2.24L of chlorine under SATP, the percentage purity of the MnO_2 sample is _____. (Nearest integer)

[Atomic weight = H : 1.0, O : 16.0, C : 12.0, Cl : 35.5, Mn : 55.0]

[SATP : T = 298K, P = 10^5 Pa]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 52 Question Id : 6760331402 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The total kinetic energy of 10 moles of a monoatomic ideal gas at 25ºC in kJ is _____. (Nearest integer)

$[R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}]$

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 53 Question Id : 6760331403 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The ratio of radii for the first and third orbits of hydrogen atom is $1 : x$. The value of x is _____. (Integer answer)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 54 Question Id : 6760331404 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The work done by an ideal monoatomic gas when it is taken along the path ABCD as shown in the figure is xP_0V_0. The value of $(-x)$ is _____. (Nearest integer)

[$\ln 2 = 0.69$]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 55 Question Id : 6760331405 Question Type : SA
Correct Marks : 4 Wrong Marks : 0
The pH of the solution resulted when 150 mL of 0.1 M ammonia solution is titrated with 50 mL of 0.1M HCl [$pK_b(NH_3) = 4.7$] is _____. (Nearest integer)

[$\log_{10} 2 = 0.30$]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes

Question Number : 56 Question Id : 6760331406 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The potential of a cell containing two hydrogen electrodes, one in contact with 10^{-8} M H^+ concentration and the other in contact with 0.025 M H^+ concentration is $x \times 10^{-4}$ V. The value of x is _____. (Nearest integer)

[Given : $\dfrac{2.303\,RT}{F} = 0.059$ and $\log_{10} 2 = 0.30$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal
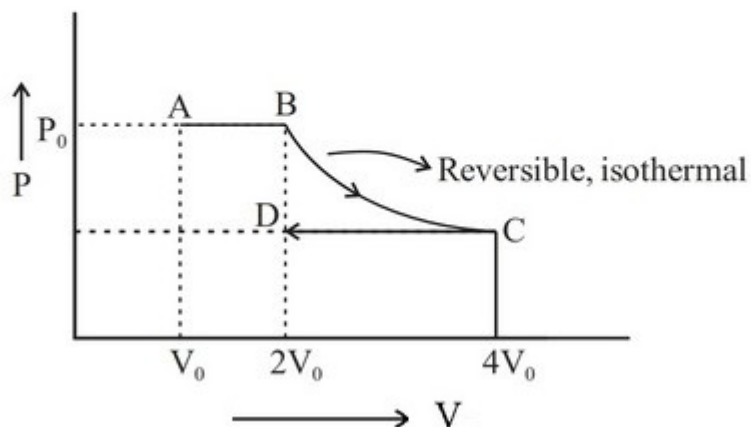
Text Areas : PlainText

Possible Answers :

100

Question Number : 57 Question Id : 6760331407 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The inactivation process of virus is first order with respect to virus concentration and 2% of the virus was inactivated in the first one minute. Time taken (in minutes) for the virus to become 75% inactivated is _____. (Nearest integer)

[Use $\log_{10} 2 = 0.3010$, $\log_{10} 3 = 0.4771$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Question Number : 58 Question Id : 6760331408 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

In an adsorption isotherm, it is seen that the graph of $\log\left(\dfrac{x}{m}\right)$ vs log P, where P is in atm, is a straight line inclined at 45° and the intercept is 0.699. The amount of solute in grams adsorbed per gram of adsorbent at a pressure of 0.5 atm is $x \times 10^{-3}$. The value of x is _____. (Nearest integer)

[Use $\log_{10} 2 = 0.3010$; $\tan 45° = 1$]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 59 Question Id : 6760331409 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The number of electrophiles in the list below is _____. (Integer answer)
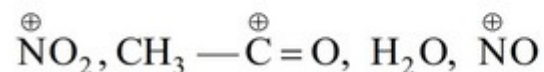
$$\overset{\oplus}{NO_2},\ CH_3\!-\!\overset{\oplus}{C}=O,\ H_2O,\ \overset{\oplus}{NO}$$

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 60 Question Id : 6760331410 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The number of isomers with molecular formula C_3H_9N, which will react with $CHCl_3 + KOH$ is _____. (Integer answer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Mathematics Section A

Section Id :   67603395

Section Number :   5

Section type :   Online

Mandatory or Optional :   Mandatory

Number of Questions :   20

Number of Questions to be attempted :   20

Section Marks :   80

Enable Mark as Answered Mark for Review and Clear Response :   Yes

Sub-Section Number :   1

Sub-Section Id :   67603395

Question Shuffling Allowed :   Yes

Question Number : 61 Question Id : 6760331411 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $\mathbb{R}$ be the set of real numbers and '*' be a binary operation on $\mathbb{R} - \{0\}$ defined by

$$a * b = a + 2b + \frac{a}{b} .$$

Then the operation '*' is

Options :

6760334231. associative and commutative

6760334232. commutative but not associative

6760334233. associative but not commutative

6760334234. neither associative nor commutative.

Question Number : 62 Question Id : 6760331412 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

If the equations $2x^2 + kx - 5 = 0$ and $x^2 - 3x - 4 = 0$ have one root in common, then a value of 'k' is

Options :

6760334235. -2

6760334236. 3

6760334237. -3

6760334238. 2

Question Number : 63 Question Id : 6760331413 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Let A = (a_{ij}) be a 3×3 matrix, where $a_{ij} = 7^{\max\{i,j\}}$. Then *det* A is equal to

Options :

6760334239. 7^6

6760334240. $6 \cdot 7^6$

6760334241. $6^2 \cdot 7^6$

6760334242. $6^3 \cdot 7^6$

Question Number : 64 Question Id : 6760331414 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Let A be a 3×3 matrix and | A | = −1. A matrix B is obtained from the matrix A by
applying the following elementary row operations :

$$R_2 \rightarrow R_2 + 3R_1$$

$$R_3 \rightarrow 3R_3$$

$$R_1 \rightarrow R_1 - 5R_3 .$$

Then | B | is equal to :

Options :

6760334243. -27

6760334244. -3

6760334245. 1

6760334246. 11

Question Number : 65 Question Id : 6760331415 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

For the system of linear of equations

$$(k-3)x + y + z = 0$$

$$x + (k-3)y + z = 0$$

$$x + y + (k-3)z = 0$$

the number of distinct values of k, for which it has a non-trivial solution, is

Options :

6760334247. 3

6760334248. 2

6760334249. 1

6760334250. 0

Question Number : 66 Question Id : 6760331416 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

In the Binomial expansion of $\left(2x\sqrt{x}+3y^{\frac{1}{16}}\right)^{33}$, the number of terms, having positive integral powers of x and y is :

Options :

6760334251. 0

6760334252. 1

6760334253. 2

6760334254. 3

Question Number : 67 Question Id : 6760331417 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

If 'm' is the arithmetic mean of two distinct real numbers l and n ($l, n > 1$) and G_1, G_2 and G_3 are three geometric means between l and n, then $G_1^4 + 2G_2^4 + G_3^4$ equals

Options :

6760334255. $2l^2mn$

6760334256. $4lm^2n$

6760334257. $4lmn^2$

6760334258. $2lm^2n^2$

Question Number : 68 Question Id : 6760331418 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\lim_{x \to 0} (1+x)^{\frac{1}{e^x - 1}}$ is equal to

Options :

6760334259. 0

6760334260. 1

6760334261. e

6760334262. e^e

Question Number : 69 Question Id : 6760331419 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

If for non-zero distinct real numbers a, b and c,

$$f(x) = \begin{cases} x\alpha + \sqrt{2}a\sin x, & 0 \le x < \dfrac{\pi}{4} \\ 2x\alpha \cot x - c\sin 2x, & \dfrac{\pi}{4} \le x < \dfrac{\pi}{2} \\ -8ac\cos 2x - \pi\alpha b, & \dfrac{\pi}{2} \le x \le \pi \end{cases}$$

is continuous on $[0, \pi]$, then

Options :

6760334263. a, b, c are in A.P.

6760334264. $\dfrac{1}{a}, \dfrac{1}{b}, \dfrac{1}{c}$ are in A.P.

6760334265. a, b, c are in G.P.

6760334266. $\dfrac{1}{a} + \dfrac{2}{b} + \dfrac{1}{c} = 0$

Question Number : 70 Question Id : 6760331420 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Let $f : \mathbb{R} \to \mathbb{R}$ be a differentiable function such that $f(0) = 2$. If $\left| \dfrac{df}{dx} \right| \le 3$, for all $x \in \mathbb{R}$, then $f(1)$ lies in the interval

Options :

6760334267. $[5, \infty)$

6760334268. $(-\infty, -1]$

6760334269. $[-1, 5]$

6760334270. $(-\infty, -1) \cup (5, \infty)$

Question Number : 71 Question Id : 6760331421 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

If the function $f : \mathbb{R} \to \mathbb{R}$ defined by $f(x) = \dfrac{x^3}{3} - (2a + 3b)x^2 + 24abx + 5$ has a local

maxima at -4 and a local minima at 4, then a value of $4a + 3b$ is

Options :

6760334271. $\dfrac{1}{2}$

6760334272. 2

6760334273. 0

6760334274. 1

Question Number : 72 Question Id : 6760331422 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The integral $\displaystyle\int \dfrac{dx}{\sqrt{2x+5} - \sqrt{2x+3}}$ is equal to

(where C is a constant of integration)

Options :

6760334275. $\dfrac{1}{3}\left[(2x+5)^{\frac{3}{2}} + (2x+3)^{\frac{3}{2}} \right] + C$

6760334276. $\dfrac{1}{6}\left[(2x+5)^{\frac{2}{3}} + (2x+3)^{\frac{2}{3}} \right] + C$

6760334277. $\dfrac{1}{6}\left[(2x+5)^{\frac{3}{2}}+(2x+3)^{\frac{3}{2}}\right]+C$

6760334278. $\dfrac{1}{12}\left[(2x+5)^{\frac{2}{3}}+(2x+3)^{\frac{2}{3}}\right]+C$

Question Number : 73 Question Id : 6760331423 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

A curve passes through the point (–1, 4). If the normal to it at any point (x, y) on it passes through (2, 0), then its equation is

Options :

6760334279. $(x-2)^2+y^2=25$

6760334280. $2(x-2)^2+y^2=34$

6760334281. $2y^2-(x-2)^2=23$

6760334282. $y^2-(x-2)^2=7$

Question Number : 74 Question Id : 6760331424 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

If an ellipse passes through the point (4, 1) and has foci at $(\pm 3, 0)$, then its eccentricity is

Options :

6760334283. $\dfrac{2\sqrt{2}}{3}$

6760334284. $\dfrac{\sqrt{2}}{3}$

6760334285. $\dfrac{1}{\sqrt{2}}$

6760334286. $\dfrac{1}{2}$

Question Number : 75 Question Id : 6760331425 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The tangents, to the parabola $y^2 = 2 - x$ at the points of its intersection with the line $y = x - 2$, intersect at the point

Options :

6760334287. $\left(-\dfrac{1}{2}, 2\right)$

6760334288. $\left(2, -\dfrac{1}{2}\right)$

6760334289. $(2, 0)$

6760334290. $\left(2, -\dfrac{3}{2} \right)$

Question Number : 76 Question Id : 6760331426 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Let L_1 and L_2 be two lines passing through the points $P(b-c, c-a, a-b)$ and Q

$\left(\dfrac{1}{l}, \dfrac{1}{m}, \dfrac{1}{n} \right)$ respectively, where $\dfrac{1}{l}, \dfrac{1}{m}$ and $\dfrac{1}{n}$ are the ath, b^{th} and c^{th} terms of an

Arithmetic Progression. If L_1 and L_2 intersect at the origin, then an angle between them
is

Options :

6760334291. $\dfrac{\pi}{3}$

6760334292. $\dfrac{\pi}{2}$

6760334293. $\dfrac{\pi}{4}$

6760334294. $\dfrac{\pi}{6}$

Question Number : 77 Question Id : 6760331427 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A plane intersects the *yz*-plane at $x=0$, $2y-3z=5$ and it intersects the *xy*-plane at $z=0$, $7x+4y=10$. Then the distance of the point $(1, -2, -1)$ from this plane is

Options :

6760334295. $\dfrac{1}{\sqrt{101}}$

6760334296. $\dfrac{3}{\sqrt{101}}$

6760334297. $\dfrac{5}{\sqrt{101}}$

6760334298. $\dfrac{7}{\sqrt{101}}$

Question Number : 78 Question Id : 6760331428 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A dice is thrown twice. If A is the event that the sum of numbers appearing on them is 7 and B is the event that number 5 appears at least once, then P(B|A) is equal to

Options :

6760334299. $\dfrac{1}{2}$

6760334300. $\dfrac{1}{3}$

6760334301. $\dfrac{2}{11}$

6760334302. $\dfrac{2}{5}$

Question Number : 79 Question Id : 6760331429 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The maximum value of $(\cos\theta_1)\cdot(\cos\theta_2)\cdot(\cos\theta_3)\cdot\ldots\cdot(\cos\theta_{10})$ under the restrictions $\quad 0$

$< \theta_1, \theta_2, \ldots, \theta_{10} < \dfrac{\pi}{2}$ and $(\cot\theta_1)\cdot(\cot\theta_2)\cdot\ldots\cdot(\cot\theta_{10}) = 1$ is

Options :

6760334303. 1

6760334304. $\dfrac{1}{512}$

6760334305. $\dfrac{1}{1024}$

6760334306. $\dfrac{1}{32}$

Question Number : 80 Question Id : 6760331430 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The statement $\sim\left(p \leftrightarrow \sim q\right)$ is equivalent to

Options :

6760334307. $p \leftrightarrow q$

6760334308. $p \leftrightarrow \sim q$

6760334309. $\sim q \rightarrow p$

6760334310. $\sim p \wedge q$

Mathematics Section B

Section Id : 67603396

Section Number : 6

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 10

Number of Questions to be attempted : 5

Section Marks : 20

Enable Mark as Answered Mark for Review and Clear Response : Yes

Sub-Section Number : 1

Sub-Section Id : 67603396

Question Shuffling Allowed : Yes

Question Number : 81 Question Id : 6760331431 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The number of elements in the set $\{x \in \mathbb{R} : (|x| - 2) \cdot |2x + 3| = 1\}$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Possible Answers :

100

Question Number : 82 Question Id : 6760331432 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If six letter words (with or without meaning) are formed using A, B, C, D, E and F, then the number of words, in which exactly one of these alphabets is repeated three times and the other three are distinct, is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 83 Question Id : 6760331433 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If the sum of all 3-digit numbers which are multiples of 9 is $41k$, then 'k' is equal to

_____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 84 Question Id : 6760331434 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If $[x]$ denotes the greatest integer $\leq x$, then the value of $\int\limits_{-2}^{4} |\,[x] - x\,|\,dx$ is _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 85 Question Id : 6760331435 Question Type : SA
Correct Marks : 4 Wrong Marks : 0
If the area (in sq. units) bounded by the parabolas $5x^2 - y = 0$ and $2x^2 - y + b = 0$ $(b>0)$
is $12\sqrt{3}$, then 'b' is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 86 Question Id : 6760331436 Question Type : SA
Correct Marks : 4 Wrong Marks : 0
The circles, $x^2 + y^2 + 2x + 4y - 4 = 0$ and $x^2 + y^2 - 4x + 4y + k = 0$ touch each other
internally. If the point of contact of these circles is (a, b), then $5(a^2 + b^2)$ is equal to

_____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes

Question Number : 87 Question Id : 6760331437 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If the solution $y = y(x)$ of the differential equation $(y + 3x^4)\dfrac{dx}{dy} = x$, $x > 0$, satisfieds

$y(1) = -1$, then the value of $\dfrac{d^2 y}{dx^2} - \dfrac{dy}{dx} + y$ at $x = 2$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 88 Question Id : 6760331438 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The mean and variance of 7 observations are 7 and 18 respectively. If 5 of the observations are 2, 4, 10, 11, 13 and the remaining observations are x and y, then xy is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 89 Question Id : 6760331439 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A vertical pole of height $10\sqrt{3}$ meters is observed from three points, A, B and C in the same horizontal line passing through the foot 'O' of the pole. The angles of elevation of the top, 'P', of the pole from A, B and C are in A.P. If AP = $20\sqrt{3}$ meters, OC = 10 meters and BP = k meters, then k^2 is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 90 Question Id : 6760331440 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let $\vec{a} = 2\hat{i} + \alpha\hat{j} + \hat{k}$ and $\vec{b} = \beta\hat{i} - 5\hat{j} + \gamma\hat{k}$, where α, β and γ are real numbers. If $\vec{a} \times \vec{b} = 26\hat{i} - 11\hat{j} - 19\hat{k}$, then $\alpha - \beta + \gamma$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100